Template for Nuclear Reaction Data Papers Published in Nuclear Data Sheets 2019

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We describe an updated LATEX template for nuclear reaction data papers published in Nuclear Data Sheets. Compared to earlier versions we explicitly mention ethics requirements, in particular regarding plagiarism. We include recently developed bibliography style file for Bibtex and Gnuplot template for figures. Submission deadline for the January 2019 special issue is 15 July 2018.

CONTENTS

I. INTRODUCTION

The journal Nuclear Data Sheets (NDS) has established tradition of publishing special issues on nuclear reaction data which appear once a year. This provides a forum for important papers on topics that may require extensive page count beyond what is accepted by other refereed journals. We follow the principle "by invitation only" and are primarily interested in reference papers with potential of making a considerable impact. In keeping with the high NDS standards, strict refereeing procedures are followed.

Our template closely resembles that of Physical Review C. The authors should have the document class REVTeX 4.1 installed which is included in most recent LATEX distributions. It can also be downloaded from *http://publish.aps.org/revtex*.

The present template is organized as follows. We start with ethics requirements in Sec. II, summarize our history in Sec. III, describe submittal and reviewing process in Sec. IV, offer some LATEX help in Sec. V and make conclusions in Sec. VI.

II. ETHICS REQUIREMENTS

Elsevier imposes strict ethics requirements on the authors, one of the major concern being plagiarism. Current plagiarism codes are capable to identify a single sentence copied from a source however obscure. The authors should be aware of these capabilities and avoid potential trouble and retraction of their paper. It should be stressed that this applies also to copying from a source with overlapping list of authors (self-plagiarism).

For more details see *https://www.elsevier.com/ authors/journal authors/policies-and-ethics*.

III. HISTORY OF NDS SPECIAL ISSUES

The first paper was published in 2006. The "Big paper" on the US evaluated nuclear data library ENDF/B-VII.0

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is the most cited paper of the entire series, exceeding 1,500 citations by Scopus. Short historical overview can be found in Table I.

We focused on publishing extensive reference papers, in several instances well in excess of 100 pages, revolving around two major topics: evaluated nuclear data libraries, and evaluation and processing methods & tools. In addition, we published proceedings of two Workshops and the major ND2013 Conference.

IV.   PREPARATION OF PAPERS, SUBMITTAL AND REVIEWING

Due attention should be given to writing a paper to meet high standards of NUCLEAR DATA SHEETS. Considering the amount of work needed to produce extensive papers we recommend the following gradual process:

- March - detailed outline,

- April - crude draft, including final title, authors and abstract,

- June - complete draft, and

- July - official submittal to the NDS editor, consisting of full set of files (*.tex, figures, *.pdf) .

This schedule allows three months (August - October) for refereeing, 1-2 iterations with the authors and final editorial processing. Assembly and thorough checking of the whole issue should be done in November, followed by submittal of the ready-to-print issue to Elsevier.

The authors should communicate with the NDS special issue editor for further guidance.

Each paper would be refereed by 1-3 recognized experts, depending on its complexity. Papers would also be reviewed by the editor who usually provides additional comments. Accepted papers will be published in January 2019.

V.   BASIC INGREDIENTS

A.   Figures

We insist on high-quality self-explanatory figures to be prepared as separate files. Mostly used is PDF format, requiring processing the *.tex file with the pdflatex command. Figures should be fully eligible in the printed version of the journal.

Examples of well prepared figures can be seen in Figs. 1 and 2. If it does not impact the readability of the figures, the authors should consider using grey-scale colors and note that some colors (*e.g.*, light green, yellow) reproduce poorly when converted to black & white.

Gnuplot was used by Herman *et al.* [1] to produce high-quality figures, their Gnuplot file Fe56.plt is attached. It includes also Fig. 1, with Gnuplot commands readily seen in the file Fe56-capture-plt.txt.
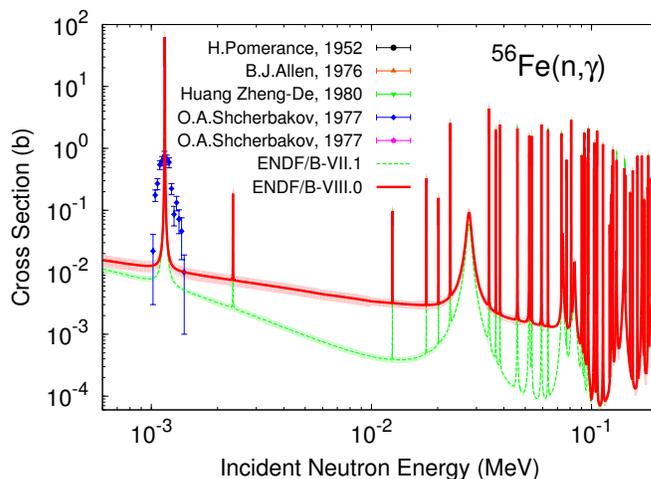

FIG. 1. (Color online) ^{56}Fe(n, γ) cross sections in the resonance region. Taken from Herman *et al.* [1]. Produced by Gnuplot, see attached file Fe56.plt.
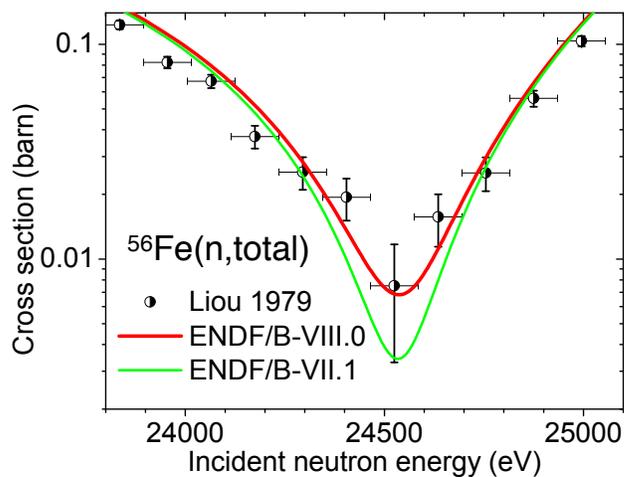

FIG. 2. (Color online) ^{56}Fe$(n,$tot$)$ cross sections in the resonance region around 24 keV. Taken from Herman *et al.* [1].

B.   Tables

Tables should be prepared using the table environment. Be sure to put a double-line at the very top and very bottom of each table, avoid the use of outside vertical lines. As an example, Table II lists some errors commonly made by authors contributing to NUCLEAR DATA SHEETS.

C.   References

Bibliography references should be made using the LATEX command \cite. A tilde (~) is commonly used before this command to achieve best formatting. Examples include the citation of a paper, a book, a laboratory report and a web-page, see Refs. [1–4].

TABLE I. History of special issues of Nuclear Data Sheets.

Year	Vol	Issue	Pages	Major Topic	Major Paper(s)	Comment
2006	107	Dec	187	US evaluated library	ENDF/B-VII.0	About 1,500 citations (Scopus)
2007	108	Dec	167	Evaluation methods	EMPIRE code	
2008	109	Dec	198	Covariance Workshop	CW2008 Proceedings	34 shorter papers
2009	110	Dec	218	International libraries	RIPL, Standards	Projects coordinated by the IAEA
2010	111	Dec	242	Processing methods	NJOY code	Also fission product yields
2011	112	Dec	266	US evaluated library	ENDF/B-VII.1	2nd most cited paper (1000 citations)
2012	113	Dec	330	Evaluation methods	TALYS code	Also experimental covariances
2013	—	—	—	—	—	Page quota used for ND2013
2014	118	Apr	636	ND2013 Conference	Proceedings, part 1	Edited by M. Herman *et al.*
	119	May	428	ND2013 Conference	Proceedings, part 2	350 mostly shorter papers
	120	Jun	308	ND2013 Conference	Proceedings, part 3	
2015	123	Jan[a]	236	Covariance Workshop	CW2014 Proceedings	39 shorter papers
2016	131	Jan	399	Fission	PFNS of Actinides, GEF code	
2017	139	Jan	202	Data applications	Fuel assemblies, FISPACT code	
2018	148	Feb	420	US evaluated library	ENDF/B-VIII.0, CIELO	Publishing delayed by one month

[a] Starting with the 2015 issue the publishing schedule is January of a given year.

TABLE II. Errors commonly made by NDS authors.

Wrong	Correct	Command to be used
56Fe	^{56}Fe	`$^{56}$Fe`
Reference [1]	Ref. [1]	`Ref.~\cite{Herman2018}`
in Figure 1	in Fig. 1	`in Fig.~\ref{fig:Fe56-cap}`
Eq.1 shows	Eq. (1) shows	`Eq.~\eqref{eq:Yi} shows`
k_{eff}	k_{eff}	`$k_\mathrm{eff}$`

The authors should pay attention to the following points: full titles must be always provided; apostrophes should be given in the US style; the names of journals should be abbreviated and given in `\sc` fonts, *e.g.*, Nucl. Data Sheets; each bibliography item should have a period at the very end.

We recommend using a Bibtex file such as `References.bib` of the present template, for detailed rules see `NDS-Bibtex-rules.txt`. Processing should be done with the command `pdfLaTeX+MakeIndex+BibTeX`. Another option would be a simple bibliography list, using `\bibitem` for each item.

D.   Useful Suggestions

1.   Equation Examples

Equations should be prepared using the `equation` environment, each containing a `\label` for referencing. Note that equations are considered part of the running text and as such should be accompanied with appropriate punctuation such as a period or comma at the end of the equation. Two examples are given below.

The fractions Y_i are expressed as ratios of the initial and final counts,

$$Y_i = \frac{N_i}{N_f}. \tag{1}$$

Here, N_i is defined as

$$N_i = Y_i N_f \frac{1 - e^{-\lambda_i \theta}}{\lambda_i}, \tag{2}$$

where λ_i stands for the half-life and θ for the time of the measurement. Eqs. (1, 2) help to determine k_{eff} coefficients in nuclear power reactors.

2.   Two-column Wide Figures and Tables

Two-column wide figures and tables should be used as necessary, using the `figure*` and `table*` environments, respectively.

One should keep in mind that LaTeX can be fairly stubborn in deciding where to place figures and tables. Usual remedy is reshuffling, combined with the command `\clearpage`.

VI.   CONCLUSIONS

We presented an updated LaTeX template for nuclear reaction data papers published in Nuclear Data Sheets. New are ethics requirements, bibliography style file for Bibtex and Gnuplot template for figures.

ACKNOWLEDGMENTS

[1] M. W. Herman, A. Trkov, R. Capote *et al.*, "Evaluation of Neutron Reactions on Iron Isotopes for CIELO and ENDF/B-VIII.0," Nucl. Data Sheets **148**, 214 (2018).

[2] S. F. Mughabghab, *Atlas of Neutron Resonances: Thermal Cross Sections and Resonance Parameters*. Amsterdam: Elsevier (2006).

[3] D. L. Smith, "Covariance Matrices for Nuclear Cross Sectons Derived from Nuclear Model Calculations," Tech. Rep. ANL/NDM-159, Argonne National Laboratory (1995).

[4] A. J. Koning and D. Rochman, "TENDL-2010: TALYS Evaluated Nuclear Data Library." //http:www.talys.eu/tendl-2010/ (2010).

Appendix A: Selected Ethics Topics

Authorship of the paper: Authorship should be limited to those who have made a significant contribution to the conception, design, execution, or interpretation of the reported study.

Originality and plagiarism: The authors should ensure that they have written entirely original works, and if the authors have used the work and/or words of others, that this has been appropriately cited or quoted.

Appendix B: List of Files

The NDStemplate2019.zip package is comprehensive and contains the following 15 files:

- Source file: NDStemplate2019.tex

- Processed file: NDStemplate2019.pdf

- 2 Figure files: Fe56-capture, Fe56-total

- 7 Bibliograhpy style files: jabrv

- Bibtex file: References.bib

- Bibtex rules file: NDS-Bibtex-rules.txt

- Gnuplot template file: Fe56.plt

- Gnuplot command file: Fe56-capture-plt.txt